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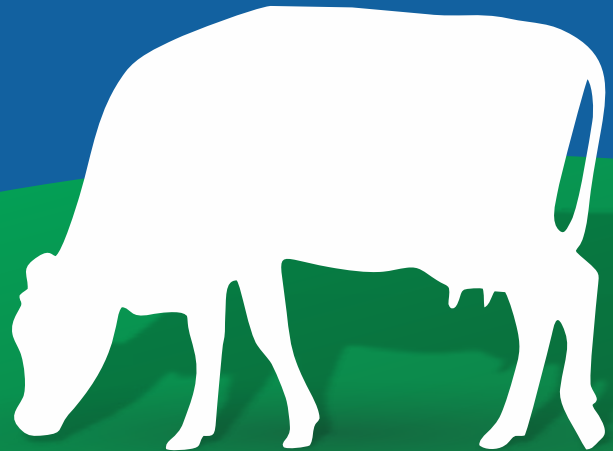
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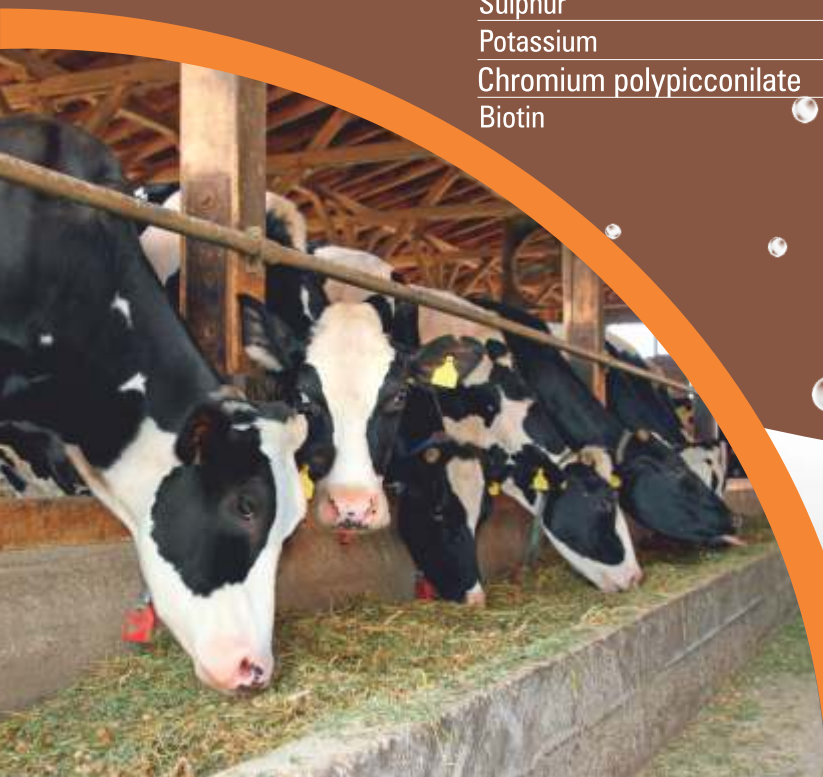
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From the Pen of Chief Editor



Feed The Future: Nourishing The Dairy Industry's Sustainable Growth!

As the dairy industry faces a future defined by environmental challenges and increasing demand, the topic feed and fodder emerges as a critical pillar for its sustainable growth. This editorial explores the pivotal role of nutrition in shaping the industry's trajectory and emphasises the need for responsible practises that ensure a flourishing future.

Promoting eco-friendly and regenerative agriculture practises is the foundation of this shift. To maintain sustainability, it is essential to improve soil health, reduce chemical inputs, and practise precision agriculture. Adoption of modern technologies that improve production, reduce waste, and optimise resource utilisation is very important.

To realise this aim, innovative and environmentally friendly agricultural practises must be adopted. We can maximise resource use and lessen environmental effects by switching to precision agriculture practises and lowering our dependency on damaging inputs. Additionally, encouraging a variety of regional feed sources increases dairy farming's resilience, making it less susceptible to changes in the climate.

Empowering dairy farmers with knowledge and modern technologies is equally vital. By providing expert guidance and financial support, we can equip farmers to make informed decisions and implement sustainable feeding practises effectively.

Collaboration among the stakeholders is the linchpin of success. Governments, feed producers, researchers, and dairy farmers must work hand in hand to foster a cohesive ecosystem that promotes sustainable feed and fodder practises across the industry.

In conclusion, 'Feed and Fodder' is the cornerstone of the dairy industry's growth and sustainability. By prioritising responsible nutrition, embracing innovation, empowering farmers, and fostering collaboration, we sow the seeds of a thriving dairy sector that not only meets the world's growing demand for dairy products but does so in a harmonious manner. Let us unite in this mission, nourishing the dairy industry's sustainable growth for generations to come.

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Abstract

Anestrus is a temporary loss of reproductive function in animals. It is a multifactorial problem that occurs due to inadequate nutrition, environmental stress, uterine pathology, and improper management practices on farms. It can be classified on the basis of the physiological and pathological conditions of the animals. The diagnosis is based on the history and different causative factors. Many chemicals (hormonal and nonhormonal) are being used as therapeutic agents for the cure of anestrus. Factors influencing the resumption of regular cyclic activity after calving include nutrition, reduction in body condition score, suckling calf, lactation length, dystocia, species, breed, age, parity, the month of calving, uterine pathology, and debilitating disease.

ANESTROUS: A Severe Problem of Bovines of The Indian Subcontinent and Curative Measures

Introduction:

Anestrus is one of the most common reproductive problems in cattle and buffalo in the Indian subcontinent. This problem is more severe in the dairy sector, which affects livestock productivity and economics to a great extent. It is a functional disorder of the reproductive cycle that is characterised by the absence of signs of estrus, either due to a lack of expression of estrus or a failure of its detection. Anestrus is commonly observed in post-pubertal heifers, during lactation, and in the early postpartum period in adult animals. Anestrus is reversible in high-yielding animals, but its reoccurrence depends on inadequate nutrition, particular species, breed, parity, season, environmental stress, and improper management practises. The diagnosis of this condition is based on the exploration of the different causative factors. Anestrus leads to economic

losses through an increased intercalving interval, poor net calf yield, production losses, and treatment expenses.

1.0 Factors affecting anestrus

1.1 Nutrition

Feed given to the animal fulfils the requirements of maintenance, growth, production, and reproduction of the animal. The nutritional status of animals affects follicular growth, maturation, and ovulation (Diskin et al., 2003). Undernutrition is one of the most prevalent causes of anestrus in heifers. A long postpartum period of anestrus (>5 months) is normally found in cattle in tropical areas under free-range rearing systems, probably due to a shortage of feed and fodder. A lower amount of feed intake during late gestation or the early postpartum period leads



Weak and anemic animal

to a negative energy balance (NEB). Under high metabolic load, nutrients are utilised for production rather than reproduction (Ferguson, 2001), which enhances the postpartum anestrus period. Along with negative energy balance, the deficiency of minerals like calcium (Ca), phosphorus (P), copper (Cu), zinc (Zn), and manganese (Mn) is also associated with anestrus (Hidioglou, 1979; Campbell et al., 1999). Minerals work as Co-factors (catalysts) in enzymatic reactions; thus, it is well established that minerals play an intermediate role in the action of hormones and enzymes at the cellular level, and their deficiency ultimately affects the reproductive performance of females (Bearden et al., 2004).

These problems can be controlled by the supplementation of chelated minerals according to the animal's demand.

1.2 Body Condition Score (BCS)

A visual and tactile evaluation of body fat reserves in bovines using a 5-point scale with 0.25-point increments. Body condition scores (BCS) are an indirect estimate of energy balance. Body condition score is a measure of the nutritional status of animals and is an important factor influencing reproductive performance (Baruselli et al., 2001). Extremes of BCS (very low and very high) at pre-calving, calving, and the early postpartum period delay the onset of cyclicity. However, for optimum reproductive performance, a BCS of 3.5 (on a five-point scale) is required at calving. Restricted feed intake during late gestation and early postpartum periods results in low BCS, consequently leading to prolonged postpartum anestrus (Dziuk and Bellows, 1983; Robinson, 1990).

1.3 Environmental Stress

Enzymes in the body act as biocatalysts for different metabolic reactions. All the enzymes in the body work efficiently at optimum temperature. Extremely

cold and hot environmental conditions affect the growth and maturation of follicles in both cattle and buffaloes. Although Indian cattle are well adapted to hot and humid climates; however, ovarian activity is greatly reduced by heat stress and manifested in the form of anestrus. New follicle formation, follicular fluid. The microenvironment and oocyte quality are affected by heat stress. In buffaloes, a decline in feed intake during the summer results in reduced secretion of gonadotrophins (El-Sawaf et al., 1979). Besides this, high environmental temperatures suppress the secretion of gonadotrophin, which leads to an alteration in ovarian folliculogenesis and steroidogenesis. Supplementation of biotin, Chromium (Cr) and vitamin E are very helpful in reducing environmental stress by enhancing the glucose uptake into cells and neutralising the free radicals.

1.4 Lactation

Longer postpartum anestrus or weaker signs of estrus have been observed in high-yielding cattle & buffalo. El-Fadaly (1980) reported that buffalo producing 8 litres of milk per day had longer postpartum anestrus (10736 days) than those producing 8 litres per day (7730 days).

Suckling stimulates the secretion of some hormones like prolactin, cortisol, and oxytocin that have a negative effect on the GnRH-LH axis. Suckling suppresses postpartum ovarian activity in both in cattle and buffalo, so that it extends the postpartum anestrus period. Moreover, postpartum anestrus is longer in continuously suckled cows than in restricted or partially suckled cows, and buffaloes (Bastidas et al., 1984; Nordin and Jainudeen, 1991). Nowadays, early weaning of calves are practised to minimise the postpartum anestrus period.

1.5 Parasitic Infestations

Parasitic infestation decreases feed intake and production, which makes the stressful animal & leads to infertility. Heavy parasitism is very common in growing calves. It affects the future productivity and reproductive efficiency of animals. Parasitic infection like fascioliasis, theileriosis, schistosomiasis, and trypanosomiasis infection in animals cause anemia and weight loss and ultimately results into anestrus. Recently, it has been found that Neosporacranium infection (Neosporosis) is widely prevalent among dairy herds and has a significant association with anestrus (Bruhn et al., 2013).

1.6 Genotype

The genetic constitution of an animal is a very important factor in determining its productive and reproductive performance of the animal. The resumption of postpartum cyclicity depends on species as well as breeds. The period of postpartum anestrus is usually longer in buffalo than cattle. Genotype affects the physiological differences among breeds and species, including differences in milk production and feed intake (Short et al., 1990).

1.7 Periparturient Diseases

Periparturient Diseases such as abnormal calving, assisted calving (dystocia), metritis, mastitis, and ketosis also affect the postpartum cycle (Fonseca et al., 1983; Opsomer et al., 2000). Delayed uterine involution also holds up the resumption of ovarian activity. Postpartum uterine infection (clinical or subclinical) suppresses GnRH release and LH secretion, and due to an inflammatory response (Sheldon and Dobson, 2004; Herath et al., 2006; Williams et al., 2007), ovarian activity remains suppressed in uterine infection.

1.8 Congenital Anestrus / Free martin:

A freemartin is a female born twin

to the male calf; 90% are sterile. Partial expression of TDF (testicular determining factor) from the male Y chromosome also inhibits the female gonad. MIF (Mullerian inhibition factor) from the male prevents Mullerian duct formation, so no uterus forms, and the heifer becomes sterile.

2.0 Diagnosis of anestrus

2.1 History

Failure or absence of signs of estrus by the heifer or 60–90 days post-partum in the case of the adult; symptoms of estrus shown with cyclicity that subsequently ceased and reverted into anestrus. Such cases are diagnosed when presented for pregnancy diagnosis. When livestock farmers complain that they are not able to detect estrus or have not seen any signs of estrus in that particular animal for a long time, it means the animal is in anestrus.

2.2 Progesterone Estimation

True anestrus is usually characterised by a lack of ovarian progesterone production (Peter et al., 2009). The presence of a basal level (0.5–1 ng/ml) of progesterone in the blood samples at an interval of 8–10 days further confirms the diagnosis. If the concentration of progesterone is more than 1 ng/ml, it is suspected of the presence of persistent corpus luteum.

2.3 Vaginal mucus Histopathology

A Mucus swab taken from the vagina of the suspected animal and examined under the microscope after the staining gives information about the ovarian cyclicity.

2.4 Per rectal Examination

It is a very common method of pregnancy diagnosis in rural India. Pregnancy can be a prominent cause of anestrus and therefore must be observed by careful examination of the ovary and uterine horn when any animals are present for gynaecological examinations. On perrectal

examination, the ovaries are smooth, small, and inactive, with the absence of corpus luteum. Functional corpus luteum can be palpated in cases of silent estrus as well as in anestrus. In the case of any type of cyst found in one or both ovaries, the animal is far from conception and pregnancy. In the case of a follicular cyst, an animal is always in heat or desires to mate eagerly at regular time intervals but does not conceive, and if the animal never comes in heat, a luteal cyst may be found. Both cysts can be diagnosed by rectal palpation or USG.

2.5 Ultrasonography

Ovarian pathology which is not accurately determined by per rectal palpation can be visualized by ultrasonography. It gives accurate information about different stages of follicular growth and the type of anestrus can easily be detected by ultrasonography. It can also differentiate between persistent follicles and persistent CL. Persistent follicles can be released by synthetic GnRH Buserelin acetate (Ashored) and persistent CL can be removed by ovulation with synthetic PGF₂α cloprostenol (Zolcol) thereby restoring the estrous cyclicity.

3.0 Prevention

Prevention of anestrus is preferable to treatment and can be achieved by maintaining the healthy status of the animals by adopting efficient farm management practises. Nutrition is probably the more important factor affecting ovarian activity. Special attention must be given to preventing the negative energy balance in high yielders. It can be achieved by providing adequate nutrition during the pre- and postpartum periods. The supplementation of 'Bovimin-B Ultra' mineral mixture powder with vitamins, minerals, and antioxidants in feeds is very helpful in the restoration of cyclicity in estrous.

4.0 Treatment

Anestrus can be treated according to its cause; however, there is no single panacea to correct it. Various therapeutic agents, including hormonal and non-hormonal compounds, have been extensively used for the restoration of cyclicity in anestrus cattle and buffalo by several workers with varying degrees of success. In order to ensure effective treatment, the health and nutritional status of the animals must be in good condition. Besides deworming, the supplementation of vitamins, minerals, and antioxidants in the feed is useful to improve the health status of the animals. Utero-ovarian massage is the oldest, simplest, cheapest, and most effective method to induce estrus in anestrus cattle and buffalo. Proper treatment with intrauterine suspension (Utriplex) against the uterine infection.

Conclusion:

In the current scenario anestrus is the most commonly occurring problem in India. When we set new target day by day to achieve higher and higher milk production, due to huge pressure on animals for production, thus animal comes under stress and becomes more susceptible to the occurrence of anestrus. Milk production reached more than two times in India in the last two decades. i.e. milk production was 84.4 million tons in 2001–2002 which has drastically increased to 221.1 million tons in 2021–2022 and per capita milk availability shifted to 444 grams/Day from 222 grams/Day in the last 20 years. Anestrus is the result of mismanagement in rearing, feeding, reduction in body condition score, suckling calf, lactation, dystocia, species, breed, parity, uterine pathology & other debilitating diseases. Once the reasons are taken care the animal normally comes in estrous except for congenital anomaly.



Effect of The Medicinal Plant Moringa Oleifera for Management Clinical Mastitis in Dairy Cattle

Introduction: In livestock, mastitis is the most common economic disease of milch cattle and remains one of the major problems for the dairy industry. Mastitis is the inflammation of the udder parenchyma and mostly occurs due to an invasion of bacteria through the teat canal from the environment or during the milking procedure. Disease can be identified by abnormalities in the milk and udder parenchyma, with or without systemic illness. Significant economic losses are mostly due to pathogen-mediated damage to the milk secreting tissue of the udder and subsequent reduced milk production in affected animals.

Moringa oleifera is one of the best-known, most widely distributed, distributed and naturalised species of the monogeneric family Morinaceae. The medicinal plant Moringa oleifera is known to possess high nutritional value because of the presence of protein, vitamins, and various phenolic compounds and has

a diverse range of medicinal uses, which include antioxidant, anti-inflammatory, antispasmodic, diuretic, anti-ulcer, antibacterial, anti-fungal, and wound healing.

Use of the medicinal plant Moringa oleifera (Drumstick)

Oleifera oleifera leaves contain several types of bioactive compounds. The medicinal value of these herbs and the different parts of the plant has long been recognised in folkloric medicine. The leaves and fruits have been reported to contain hypotensive compounds of the glycoside type (i.e., niazirin, niazimicin, and niazicin A). Other than that, the methanol extract of M. oleifera leaves has also been reported to contain various types of flavonol glycosides. So many studies were carried out to evaluate the antinociceptive and anti-inflammatory activities of M. oleifera using various animal models.



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Benefits of The Organic Moringa :



Phytochemical constituents of Moringa

Nitric oxide (NO) is one of the inflammatory mediators that causes inflammation in many organs. This inorganic free radical has been implicated in physiological and pathological processes such as vasodilation, non-specific host defence, and acute or chronic inflammation. Nitric oxide synthase (NOS) isoforms are homodimers that catalyse the oxidation of L-arginine to L-citrulline and nitric oxide in an NADPH- and O₂-dependent process. There are at least three distinct isoforms of NOS. Endothelial isoform (eNOS), neuronal NOS (nNOS), and inducible NOS (iNOS). Inducible NOS (iNOS) is elevated in macrophages after exposure to various stimuli, such as the bacterial endotoxin lipopolysaccharide (LPS), IL-1, TNF- α , and IFN- γ , and produces NO in normal immune responses. Since iNOS is responsible for the overproduction of inflammation, it has become a new target for drug development in the treatment of inflammatory diseases. Several types of bioactive compounds have been isolated from various parts of *M. oleifera*. The leaves, in particular, have been reported to contain hypotensive compounds of the glycoside type (i.e., niazinin A, niazinin B, niazimicin, niaziminin A, and niaziminin B). Other than that, the methanol extract of *M. oleifera* leaves has also been reported to contain various types of flavonol glycosides, as well as kaempferol, rutin, and quercetin. Based on the earlier reports, compounds isolated from *M. oleifera* leaves showed several mechanisms of action related to antinociceptive and anti-inflammatory activities. Flavonoids, in particular, have been reported to be effective blockers of nitric oxide synthase type 2 (NOS-2) action, which in turn induces NO synthesis, and NO has earlier been associated with antinociceptive and anti-inflammatory mechanisms. In addition, flavonoids also inhibited protein tyrosine kinase action that is

involved in NOS-2 expression at the molecular level. Flavonoids have been shown to inhibit the action of phospholipase A₂ and phospholipase C, which are involved in inflammatory processes. Flavonoids also modulate the induction of NOS-2 via indirect inhibition of the cyclooxygenase and/or lipoxygenase pathways. Studies also suggested that the ethyl acetate extract from *M. oleifera* fruits showed NO inhibition.

Use as anti inflammatory- In many states of India, the local people used a combination of Turmeric powder (*Curcuma longa*), Moringa oleifera leaves, and Common salt (Sodium chloride) to control clinical mastitis. First of all, the people collect the fine quality of turmeric rhizome, and the rhizome is dried up under shade for 20–25 days. After it is properly dried up, the turmeric rhizome is ground into a fine powder. After that, disease-free and healthy fresh Moringa oleifera leaves were collected from the tender shoots, and then the leaves were crushed and ground with the help of a specially designed stone grinder. The turmeric powder was mixed with Moringa oleifera leaf paste and allowed to blend for 30 minutes. Then common salt was mixed with the medicinal paste. Finally, the medicinal pastes were applied over the mastitis-infected udder. This method is administered by the farmers three times a week for improved results.



Moringa leaves



Turmeric Powder



Common salts



Medicinal Paste applied over the mastitis affected udder

Conclusion

Based on the studies, we can conclude that Moringa oleifera has potential anti-inflammatory agents. The aqueous extract of *M. oleifera* leaves possesses antinociceptive, anti-inflammatory, and antipyretic activities that require further extensive study. Moringa oleifera can be useful for the management of clinical mastitis in dairy animals because of its easy accessibility, inexpensiveness, and ease of preparation. Lack of well-documented traditional "hidden" practises is one of the major limitations to their exploitation.



Guduchi (*Tinospora Cordifolia*) as an Immune Enhancer in Animals

Guduchi (*Tinospora cordifolia*), a medicinal plant. It used in ayurveda is well documented for its immunoenhancer properties. One of the world's most important fields of research is medicinal plant science. By reestablishing bodily equilibrium and conditioning the body tissues, it is thought that any of these medications can foster good health and maintain organic resistance to illness. Guduchi is home to a wide range of remarkable and priceless Ayurvedic medicinal characteristics. The botanical name of guduchi is *Tinospora cordifolia* (Willd.) Miers (Family: Menispermaceae). The Government of India's Ministry of AYUSH has advocated this plant as a preventative at-home

treatment for the ongoing COVID-19 pandemic. A common Rasayana (medicinal plant) in Indian systems of medicine is guduchi. It is well-documented as a hepato-protectant and an immune-modulating agent in the ancient *Materia Medica* of Ayurveda and Siddha. The rasayanas are substances and techniques used in Ayurveda to prolong life and promote health. The Sanskrit word guduchi implies "something which protects the body from diseases".

Immunomodulatory effect

Using *in vitro*, *ex vivo*, and animal models for various illnesses, the numerous studies on the immunomodulatory action of *Tinospora cordifolia*

Dr. Priya, Dr. Vivek and Dr. Rachana Sharma

Guru Angad Dev Veterinary and Animal Science University, Ludhiana



are fundamental. *Tinospora cordifolia* has many immune potent polysaccharides like monomer units of glucose, fructose, and arabinose in high concentrations. Other immunomodulatory active substances discovered in this plant include 11-hydroxymustakone, N-methyl-2-pyrrolidone, N-formylannonain, cordifolioside A, magnoflorine, tinocordiside, and syringin.

One of the ingredients of Ayurvedic remedies for general debility, dyspepsia, cough, and urinary disorders is the stem of the *Tinospora cordifolia* plant.

The seed is stomachic, salty, and diuretic. Induces constipation, reduces appetite, relieves burning pain, treats diarrhoea, enriches blood, and cures jaundice (Raghunathan et al., 1982). Combining additional medications, *Tinospora cordifolia* roots and stem extract is used as an antidote to snakebite and scorpion stings.

Tinospora cordifolia's dry bark contains antipyretic, anti-allergic, and anti-inflammatory properties.

Anti-Diabetic effects

Indian Ayurvedic medicine frequently treats diabetes mellitus with *T. cordifolia*. Alloxan diabetic mice given an oral dose of water *T. Cordifolia* root extract had significantly lower blood sugar and brain lipid levels. In alloxan diabetic rats, the treatment with *T. cordifolia* root extract (2.5-50 mg/kg body weight) for 6 weeks

caused a significant decrease in serum and tissue cholesterol, phospholipids, and free fatty acids.

Hepatoprotective effects

The potential of *T. cordifolia* extracts to preserve the liver is another significant phenomenon. Guduchi is historically advised for the treatment of obstructive lesions, hepatosplenomegaly reduction, and Kamala (jaundice). It is a component of more than a third of the hepatoprotective formulae sold in India and can also be taken as a single agent. In cases of carbon tetrachloride-induced liver injury, *Tinospora cordifolia* has been seen to preserve normal metabolism and lower levels of particular enzymes such as alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), and total bilirubin in carbon tetrachloride-induced liver damage. *Tinospora cordifolia* extract is an effective hepato-protective agent, which may be due to several factors, including antioxidant and free radical scavenging effects, as well as promotion of liver regeneration.

In a study, *T. cordifolia* treatment for goats with CCl₄-induced hepatopathy significantly improved their hemato-biochemical and clinical conditions. *T. cordifolia* also demonstrated inactivating qualities against the surface antigens of Hepatitis B and E in vitro.

Anti-viral effects

Tinosporin, a diterpenoid that is present in *T. cordifolia*, has antiviral qualities that make it particularly useful in the treatment of retroviruses and other viral diseases. *T. cordifolia* aqueous extract has increased cytokine synthesis and immune effector cell activation. Betulin, an antiviral agent, is present in the hexane extract of *T. sinensis*. This study provides proof that *T. sinensis* possesses antiviral activities (Nemkul et al., 2021). Apigenin, a flavonoid found in *Tinospora crispa*, is best known for its antiviral properties.

Anti-inflammatory effect

In both acute and sub-acute inflammatory models, the dried stem of *T. cordifolia* exhibits a significant anti-inflammatory effect. Acetylsalicylic acid was shown to be less effective than *cordifolia* in treating acute inflammation.

In addition to the pharmacological effects indicated above, there is some evidence that suggests peripartum guduchi supplementation improves the reproductive performance of crossbred cows. Additionally, pre- and postpartum Guduchi supplementation in pregnant dairy animals was found to improve lactation yield, plasma non-esterified fatty acid (NEFA) concentrations, and also result in a decrease in somatic cell count in comparison to the non-supplemented group.

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4 Benefits

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2 Goals

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Hygiene in Milk Production: Implementing Latest Practices for Quality Assurance

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Introduction

Hygienic milk production is an essential aspect of ensuring the safety, quality, and integrity of the milk consumed by millions of people worldwide. It encompasses a set of practices and protocols aimed at maintaining cleanliness, minimizing contamination, and promoting good hygiene standards throughout the milk production process. With increasing concerns about food safety and the demand for high-quality dairy products, the importance of hygienic milk production has become paramount in the dairy industry. The process of hygienic milk production begins on the dairy farm and extends through milking, storage, transportation, processing, and distribution. It involves implementing rigorous measures to prevent the introduction and proliferation of harmful microorganisms, toxins, and foreign substances that can compromise the safety and quality of milk.

Milk, being a nutrient-rich liquid, provides an ideal environment for the growth of microorganisms, some of which can pose significant health risks to consumers. Therefore, maintaining strict hygiene practices is crucial to mitigate these risks and ensure that milk is safe for consumption. Hygienic milk production involves various key aspects, such as proper facility and equipment sanitation, personal hygiene of workers, cow cleanliness and health management, efficient milk collection and storage, testing and quality control procedures, and ongoing education and training. Embracing the latest practices and technologies in hygiene further enhances the ability to maintain high standards and meet regulatory requirements. By prioritizing hygiene in milk production, dairy farmers, milk producers, and the entire supply chain

can uphold consumer confidence, protect public health, comply with regulations, and contribute to the overall reputation of the dairy industry. It is a collective effort that requires continuous vigilance, adherence to best practices, and a commitment to quality and safety.

As the demand for clean and safe dairy products continues to rise, it is essential for dairy farmers and milk producers to adopt and implement the latest hygiene practices. This article explores the importance of hygiene in milk production and highlights some of the latest practices that can be employed to maintain high standards.

Principle of hygienic milk production:

The principle of hygienic milk production is based on implementing practices and measures to ensure the cleanliness, safety, and quality of milk throughout the production process. Here are the key principles of hygienic milk production.

- **Prevention of Contamination:**

The principle of preventing contamination involves taking proactive steps to avoid the introduction of harmful substances or microorganisms into the milk. This includes maintaining a clean and controlled environment, practicing proper cow hygiene, and preventing cross-contamination during milking and handling processes

- **Sanitization of Facilities and Equipment:**

One of the fundamental steps in ensuring hygiene in milk production is maintaining clean and sanitized facilities and equipment. Regular cleaning of milking parlors, storage tanks, pipelines, and utensils is essential to prevent the growth of

harmful bacteria. The use of approved sanitizers and detergents, coupled with proper cleaning techniques, helps eliminate contaminants and maintain a sterile environment.

- **Personal Hygiene:**

Maintaining personal hygiene is vital for everyone involved in milk production, including farmers, workers, and technicians. Practicing good hand hygiene, wearing clean clothing, and using protective gear, such as gloves and boots, significantly reduces the risk of introducing harmful bacteria into the milk. Regular health checks and immunizations for workers are also important to ensure a healthy workforce.

- **Cow Hygiene and Health:**

Healthy cows contribute to high-quality milk production. Proper hygiene practices should be implemented to maintain cow cleanliness, including regular grooming, clean and dry bedding, and effective manure management. Regular veterinary care and timely vaccinations help prevent the spread of diseases and maintain cow health. Cows with udder infections should be identified and treated promptly to prevent contamination of the milk.

- **Milk Collection and Storage:**

Efficient milk collection and storage processes are crucial to maintaining milk quality. Properly trained personnel should handle the milk, ensuring minimal contact with the

external environment. Automated milking systems help reduce the risk of contamination. Cooling milk rapidly after collection to temperatures below 4°C (39°F) inhibits bacterial growth. Milk storage tanks should be cleaned regularly, and milk should be stored separately based on quality parameters to avoid cross-contamination.

- **Testing and Quality Control:**

Regular testing and quality control procedures should be in place to monitor the safety and quality of milk. This includes testing for antibiotics, somatic cell counts, bacterial load, and other quality parameters. Timely and accurate testing helps identify any potential issues early, enabling corrective

Importance of hygienic milk production:

Aspects of Hygienic Milk Production	Importance
› Isolating Cows from Contaminants	Prevents the introduction of harmful substances and microorganisms into the milk.
› Proper Feeding and Watering Practices	Ensures that cows receive a balanced diet and clean water, promoting their health and milk quality.
› Maintaining a Clean and Sanitary Milking Environment	Reduces the risk of milk contamination during the milking process by minimizing exposure to dirt, bacteria, and other contaminants.
› Regular Cleaning and Sanitization of Milking Equipment	Prevents the buildup of bacteria and maintains equipment functionality, reducing the risk of milk contamination.
› Proper Milking Techniques and Hygiene Practices	Minimizes the transfer of bacteria and ensures the cleanliness of udders and hands during milking, maintaining milk quality.
› Proper Storage and Cooling of Milk	Rapid cooling and proper storage temperature inhibit bacterial growth, preserving milk freshness and quality.
› Quality Testing and Monitoring of Milk	Ensures that milk meets regulatory standards and identifies any potential contamination or quality issues.
› Effective Disease Prevention and Control Measures	Prevents the transmission of diseases from cows to milk, safeguarding both animal and consumer health.
› Packaging and Transportation in Clean and Sterile Conditions	Maintains the cleanliness and integrity of milk during packaging and transportation, preventing contamination.

actions to be taken promptly.

- **Packaging and Transportation:** Packaging and transporting milk in clean and sterile conditions are vital to maintaining its hygiene. Proper packaging materials, cleanliness, and adherence to hygiene protocols during transportation help prevent contamination and maintain milk quality.
- **Training and Education:** Continuous training and education are vital for dairy farmers and milk producers to stay updated with the latest hygiene practices. Regular workshops, seminars, and access to educational resources help disseminate knowledge about hygiene protocols, emerging technologies, and best practices. Encouraging a culture of hygiene awareness and accountability among all stakeholders fosters a collective effort towards maintaining high standards.

Importance of hygienic milk production:

- These aspects presented in a tabular form highlight the various steps and practices involved in hygienic milk production, emphasizing the importance of each aspect in ensuring safe and high-quality milk for consumers.

Latest practices that can be employed to maintain high standards in hygiene milk production:

- **Hazard Analysis and Critical Control Points (HACCP):** Implementing a HACCP system is a proactive approach to identify and control potential hazards in milk production. It involves conducting a thorough analysis of the production process, identifying critical control points, and establishing protocols to monitor and control those points to ensure milk safety and quality.
- **Automated Milking Systems:** Automated milking systems reduce the risk of contamination by minimizing human contact with milk during the milking process. These systems use advanced

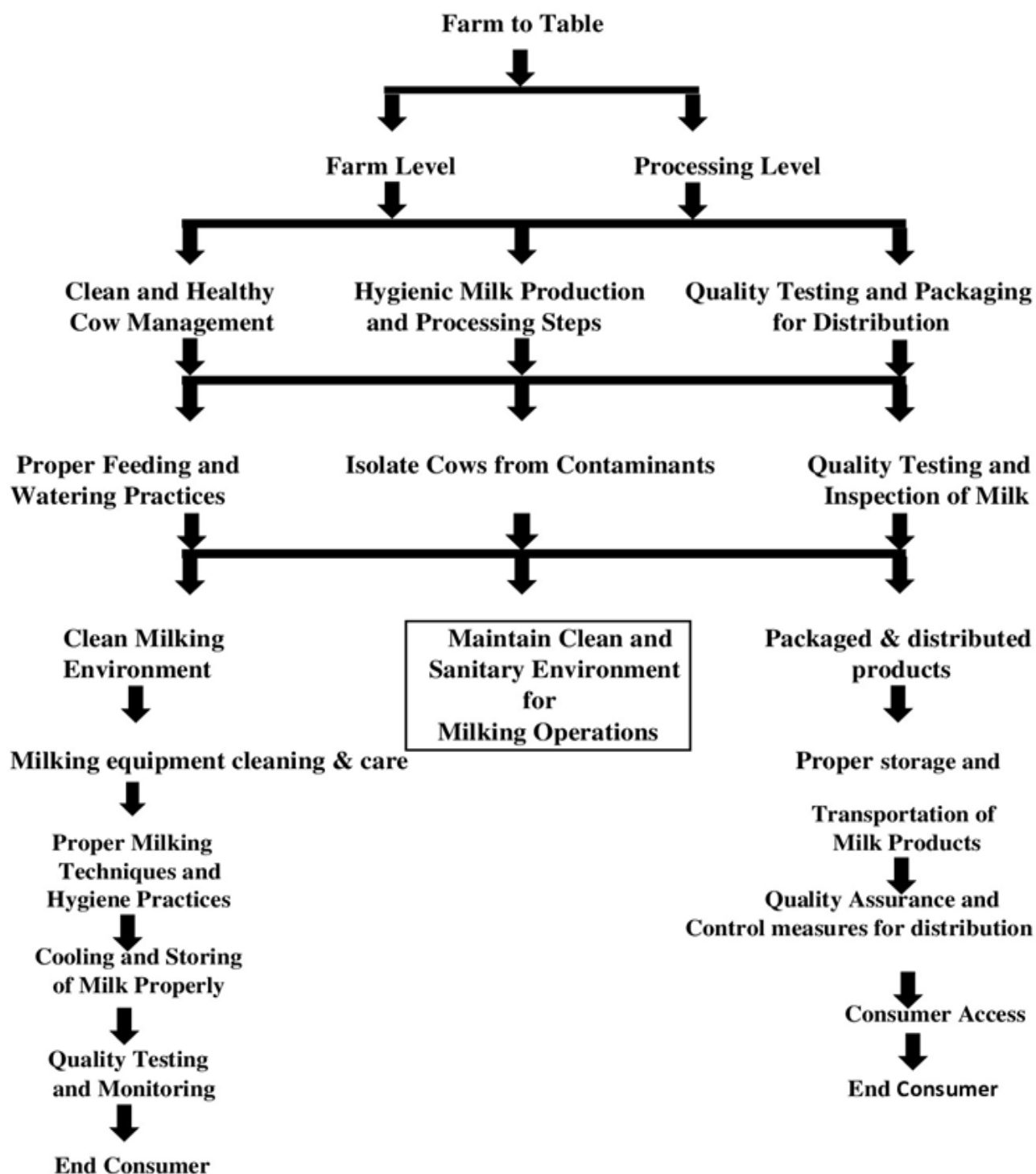
technology to clean and sanitize teats, monitor milk quality, and automate the milking process, ensuring hygienic milk production.

- **Rapid Pathogen Detection:** Utilizing rapid pathogen detection methods, such as polymerase chain reaction (PCR) and enzyme-linked immunosorbent assay (ELISA), enables quick and accurate identification of harmful bacteria, such as Salmonella, E. coli, and Listeria. Early detection helps prevent contaminated milk from entering the supply chain and facilitates prompt corrective actions.
- **Advanced Cleaning and Sanitization Techniques:** New cleaning and sanitization techniques, such as foam cleaning and dry sanitizing, offer improved effectiveness in eliminating bacteria and biofilms. These methods help reach difficult-to-clean areas, ensure thorough sanitation of equipment and surfaces, and reduce the risk of cross-contamination.
- **Data Monitoring and Traceability:** Implementing digital systems for data monitoring and traceability allows real-time tracking of milk production, storage conditions, and quality parameters. This data-driven approach enhances transparency, facilitates early detection of issues, and enables targeted interventions to maintain high hygiene standards.
- **UV-C Light Technology:** UV-C light technology is increasingly used in the dairy industry for sterilizing air, surfaces, and water. UV-C light has germicidal properties that can effectively eliminate bacteria and molds without the use of chemicals, providing an additional layer of hygiene assurance.
- **Employee Training and Hygiene Protocols:** Continuous training and education for all personnel involved in milk production are essential. Training programs should focus on proper hygiene practices, equipment

handling, cleaning protocols, and adherence to standard operating procedures (SOPs). Regular reinforcement of hygiene protocols through internal audits and monitoring systems helps maintain high standards.

- **Sustainable Hygiene Practices:** Adopting sustainable hygiene practices not only promotes environmental responsibility but also contributes to improved milk quality. This includes optimizing water usage, proper waste management, energy-efficient processes, and the use of eco-friendly cleaning agents. Sustainability initiatives align with consumer expectations and enhance the overall reputation of milk producers.
- **Collaboration and Information Sharing:** Collaboration among dairy industry stakeholders, including farmers, processors, regulators, and researchers, fosters the exchange of knowledge and best practices. Sharing information about emerging threats, technological advancements, and successful hygiene strategies helps raise the bar for hygiene standards across the industry.
- **Continuous Improvement and Innovation:** Maintaining high standards in hygiene milk production requires a commitment to continuous improvement and embracing innovative solutions. Staying updated with the latest research, industry trends, and technological advancements enables milk producers to adopt new practices and technologies that enhance hygiene and overall product quality.
- **By implementing these latest practices, milk producers can ensure the production of safe, high-quality milk that meets the expectations of consumers and regulatory standards.**

Diagrammatic representation of a "From Farm to Table Clean Milk Production System":



The diagram demonstrates the various stages and actions involved in ensuring a clean and safe milk production system, from managing healthy cows on the farm to conducting quality testing, packaging, transportation, and finally providing consumers with access to high-quality milk products.

Conclusion

Hygiene in milk production is not only a legal requirement but also a moral

responsibility towards consumers. By implementing the latest practices discussed above, dairy farmers and milk producers can ensure the safety, quality, and integrity of the milk they produce. Adhering to strict hygiene standards, such as preventing contamination, maintaining clean milking environments, practicing proper hygiene during milking, and implementing effective disease prevention measures, is crucial.

Additionally, regular quality testing, proper cooling and storage, and maintaining clean packaging and transportation conditions are essential for maintaining the integrity of milk. By embracing the latest practices and advancements in hygiene, dairy producers can confidently deliver hygienic milk products that meet the highest standards of quality assurance, gaining the trust and satisfaction of consumers.



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Assistant editor
Dairy Planner Magazine

The Importance of High-Quality Feed and Fodder in the Dairy Market: Maximizing Milk Production and Profitability

Introduction

The dairy industry is a very important sector that contributes to the global economy and provides very nutritious dairy and milk products to its consumers worldwide. The quality of feed and fodder plays a very important role in the dairy industry, which will maximise dairy production and ensure the profitability of dairy operations. This page will explore the high-quality feed and fodder in the dairy market, emphasising the impact of milk production and the overall financial gains of farmers.

- **Enhanced milk production:** A high quality of feed and fodder that meets the dietary requirements for high milk production is necessary for dairy cows that produce a lot of milk. The breastfeeding dairy cow needs carbohydrates, amino acids, fatty acids, minerals, vitamins, and water to meet the demands of the mammary gland to create milk and milk constituents. Cows fed a balanced diet experienced an increased milk yield, allowing the farmers to meet market demands and achieve higher profitability.
- **Improved milk quality:** A cow's diet directly influences the quality of milk. High-quality feed and fodder show desirable attributes such as butterfat content, protein content, and a lower somatic cell count. Milk of high quality not only enhances the reputation and competitiveness of dairy products in the market but also fetches premium pricing in the market.
- **Reduced Risk of Metabolic Disorders:** Nutritional imbalances in dairy cows can raise the risk of metabolic disorders, reducing milk output and profitability. High-quality feed and fodder, designed with the right energy sources, fibre content, and nutrient balance, can help reduce the onset of metabolic diseases such

as acidosis and fatty liver syndrome. This improves cow health, lowers veterinary costs, and guarantees that feed resources are used efficiently.

- **Healthy Rumen Function:** A well-balanced diet with high-quality feed supports optimal rumen health in dairy cows. It promotes a stable rumen environment and encourages the growth of beneficial rumen microbes, aiding in efficient fibre digestion and nutrient utilisation. Healthy rumen function enhances feed efficiency, reduces the risk of digestive disorders, and improves overall cow health and performance.
- **Animal welfare and sustainability:** Providing cows with better feed and fodder not only maximises production but also promotes sustainability and animal welfare. Well-fed cows experience better mobility, less stress, and improved behaviour. Additionally, a balanced diet helps optimise nutrition and nutrient utilisation, reducing the environmental impact of the dairy operation.
- **Optimal reproductive performance:** Proper nutrition is crucial for productive success in dairy cows. High-quality feed and fodder provide essential nutrients required for regular estrous cycles, optimal conception rates, and reduced embryonic loss. Improved reproductive performance leads to a shorter calving interval, allowing for more efficient milk production and herd expansion. Moreover, efficient reproductive management positively impacts the overall profitability of dairy operations.



- **Body Condition Management:** Maintaining an optimum body condition score (BCS) is critical for dairy cow health and output. When correctly balanced, high-quality feed and fodder help cows maintain an optimal BCS. This ensures that they have enough energy reserves for milk production and reproduction while also lowering their risk of metabolic problems like ketosis. Body condition management improves cow health and longevity, leading to a more sustainable dairy operation.

Conclusion

High-quality feed and fodder are essential for maximising milk production and profitability in the dairy market. By providing cows with a well-balanced and nutrient-rich diet, dairy farmers can optimise their cows' health, reproduction, and immune system, resulting in increased milk yield, improved milk quality, and reduced veterinary costs. Additionally, proper nutrition supports animal welfare and contributes to the sustainability of dairy operations. Investing in high-quality feed and fodder is a critical strategy for dairy farmers to stay competitive, meet market demands, and ensure long-term success in the dynamic dairy industry.



Flooring Types Used in Livestock Farm

Introduction

To increase production in dairy sector of India, it is necessary to give animal proper comfort, their environment must be considered. There should be a proper place for rest of cows where minimum harm is inflicted to them. Providing them with properly designed stalls with comfortable bedding is one of the aspects which must be considered. Providing them with inadequate hard bedding in resting place resulted in lameness, decreased performance risk of injuries.

Different Types of Flooring

1. Cement Concrete:

- Common material used
- Cheap and durable if properly constructed
- Provides the required cool conditions for the animal
- Groove and rough surface must be provided to make non slippery and to prevent them from accident.

2. Bricks:

- Provides non-conducting warmth floor which is necessary in houses.

Hard impervious bricks with grooves on the surface.

- Joints are coated with cement mortar.
- Ideal flooring for animals because of durability and damp proof condition.

3. Stone slab forming:

- Stones are made into blocks.
- Durable and strong
- Granite stones are used where they are easily available

4. Gravel:

- It absorbs water and worn out quickly.
- Continuous repair and maintenance is required.
- During disease outbreak disinfection is not possible with this type of flooring.

5. Rubber floor:

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- Rubber is used as block set on cement block or as a thin mat with grooves and ridges on the surface.
- It is costly and fixing is difficult.
- In western countries this rubber flooring is used in dairy and calving boxes to provide clean, soft and comfortable surface.

Softer bedding material for lying and spending longer time



High productivity



Optimize the time for their lying or their rest time.



Disturbed rest will affect the production.



Decreased secretion of growth hormone and decreased lying time is related to hoof health and lameness.

Cow needs 1-4 hours of rest a day which enables better flow of blood to their teats and increased salivation in mouth. This will reduce the chances of ruminal acidosis.

3L of blood per min flows through teats of standing cow, whereas 5L of blood per min flows through teats of resting cow.

Conclusions:

Proper rest also helps in maintaining good udder health and functions which will increase milk production. These all depends on stall design specially flooring material and time of day. Physical of bedding materials and nutritional conditions of animals also affects the growth of microorganism on floor. In bedding materials, presence of large number of different types of bacteria results in mastitis and increase in somatic cell count. Mastitis directly affects



quantity and quality of milk. Various flooring system has been developed to support animal comfort, health and production and

providing animal management indoor. Clean, dry, comfortable and non slippery bedding area should be there for ease of their rising.





Haemagalactia in Dairy Animals: Causes, Diagnosis and Treatment

Abstract

Haemagalactia or “blood in milk” is the presence of red blood cells in the milk. The most common cause of this condition is trauma to the udder, teat or any major blood vessels supplying the udder, systemic infections, presence of dyes or toxins in feed and diseases affecting the platelet count. There are various ways of diagnosis of this condition like assessment of clinical signs, centrifugation, certain tests like somatic cell count estimation and estimating the platelet count. Different approaches of management of this condition are elaborated in this paper.

Key words: Blood, Milk, Platelet, Teat, Udder

Introduction

Haemagalactia colloquially called as “Rosemilk” is the presence of red blood cells (intact or lysed) in the milk. This is considered as a physiological condition when it occurs during the end of gestation and in the early stages of the post-partum period. However, haemagalactia that appears much later in the postpartum period has been considered to be pathological. The most common pathological cause of haemagalactia is due to trauma to the udder, teat or any major blood vessels supplying the udder which causes hemorrhage and leads to damage to the epithelial lining of the teat cistern and escape of intact red blood cells into the milk (Heidrich and Renk, 1967). Other common conditions which cause “blood in milk” are systemic infections (*Leptospira* spp., *Micrococcus roseus*, *Lactorubefaciens gruber* etc.), presence of dyes or toxins in feed and diseases affecting the platelet count (George et al., 2007). Haemagalactia is an economically important condition as this milk is considered unfit for human consumption and causes wastage of milk until the full recovery of the condition.

Causes

Physiological haemagalactia occurs in the last stage of gestation or the initial post-partum period. This is due to the congestion of the udder and teat causing hyperemia and diapedeses of red blood cells into the milk giving it a slight pinkish tinge. This is also common in cases of udder edema caused by the pressure of the foetus. This is considered physiological and does not last for more than 14 days post-partem (Ghulam et al., 2015).

Hemorrhage – Any trauma, milking machine defects, harsh milking may cause bleeding into the milk. This is one of the most common causes of haemagalactia in bovines and can occur at any time post-partem. Any trauma leading to rupture of any varicose blood vessel in the udder, damage to the inner vascular epithelial lining of the teat cistern or udder due to faulty milking techniques (such as knuckling) could lead to bleeding and the formation of blood-tinged milk. It is also seen in cases with faulty milking machines in which the pressure is not regulated. Haemagalactia due to hemorrhage can be identified by placing the sample of milk in a test tube for 10-12 hours or by centrifuging it. The intact RBC's sediment at the bottom of the tube. The CMT/ Somatic cell count will not increase in the case of hemorrhage.

Systemic microbial infection – The most common being *Leptospira* spp. (especially *L. interrogans* and *L. pomona*) contains a hemolysin toxin that causes intravascular hemolysis leading to bleeding from all four quarters. However, this is also observed with other non-specific clinical signs such as pyrexia and inappetence. One of the characteristic signs of leptospira induced mastitis is the formation of “flabby mastitis” in which there is no visible inflammation of the udder. Other

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infections caused by *Brevibacterium erythrogenes*, *Serratia marcescens*, *Micrococcus cerasinus*, *Micrococcus chromidrogenes* rubber, *Micrococcus roseus* etc also cause the same. When milk samples of these conditions are centrifuged there is no sedimentation of red blood cells due to lysis of the blood cells. The CMT/ SCC of the milk samples of systemically infected animals might be increased.

Feeding of toxins and dyes – Feeding mouldy feeds containing coumarin, feeding of fodders belonging to family Rubiaceae (dyer's madder, *Rubia tinctorum*) or certain plant toxins present in ranunculi, conifers, poplars, alders etc. which cause capillary damage and cause bleeding.

Platelet disorders – Diseases causing thrombocytopenia such as rickettsial diseases such as *Babesia*, *Anaplasma* etc. could also cause bleeding in milk.

Diagnosis

- **Clinical signs** – The appearance of frank blood or blood-tinged milk ranging from a darker to a light pink tinge.
- **Centrifuging the milk sample** at 2500 rpm for 10 min or allowing the milk sample to settle for a couple of hours would help in pointing out the cause of haemagalactia. The presence of an RBC pellet at the bottom of the tube after centrifugation is indicative of hemorrhage. Whereas persistence of a pinkish-tinge in the milk sample is

indicative of a microbial infection or presence of a dye.



- **CMT/SCC** – an increase in the somatic cell count is indicative of an active infection of the udder and can be used to rule out bleeding due to hemorrhage
- **Estimating platelet count** – To rule out diseases which might cause thrombocytopenia. The platelet count in bovine ranges from $1-8 \times 10^3 \mu\text{l}$.

Treatment

- **Hemostats** such as Etamsylate which is also an anti-hemorrhagic and non-thrombogenic drug at the dose of 15 mg/kg for 3 days
- **Parental coagulants** such as Injection Chrome (Adrenochrome monosemicarbazone, 5 mg/ml; 8-10 injections for a cow or buffalo) or Injection Zakshot (Tranexamic acid, 500 mg/ml; 10-15ml intramuscularly)
- **Intravenous administration of calcium, magneisum and phosphorus borogluconate** is an effective coagulant that could help in reduction of bleeding due to hemorrhage. 300-400 ml must be administered for 3-4 days (Radostits et al., 2007).
- **Local and parenteral vasoconstrictors** such as 5 - 8 ml of adrenaline (1:1000) can be injected subcutaneously to treat haemagalactia. As an alternative,

5ml of adrenaline can be mixed with 20 ml of normal saline and the solution infused into the teat producing milk with reddish discoloration.

- **Antibiotics** such as Lincomycin and Spiramycin can be used in case of microbial infections as they penetrate quite well into the udder. For Leptospirosis, Streptomycin may be used.
- **Ethnoveterinary and alternative options** – These have been tried and have been observed to be effective as well, however the treatment period is much longer. Such as:
 - **Homeopathic medication** such as of *Phytolacca 200c*, *Calcarea fluorica 200c*, *Silicea 30c*, *Belladonna 30c*, *Bryonia 30c*, *Arnica 30c*, *Conium 30c* and *Ipecacuanaha 30c* has been found to be effective in reducing bleeding as well as fibrosis and inflammation.
 - **Integrative therapy** with 100g of curry leaves and 1 lemon fed orally daily for seven days has been said to be effective
 - **Camphor** which has been known to have styptic action has been effectively usdissolving
 - **Ayurvedic preparations** of 250 g of turmeric powder in 1L of warm milk with an addition of 250 g of Sambaloo leaves (Indian Wild Pepper Leaves) and giving as a drench for 2-3 days.

<p>Day 1: Before treatment</p>	<p>Day 3: After treatment with Etamsylate and Calcium</p>
	
<p>Day 5: After treatment</p>	<p>Day 7: After treatment</p>

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Humor and Invention Collide:

Feed-o-matic 3000' Creates Hilarious Parade of Cows

A cattle farmer named Ravi lived in a bustling farming town Rampur. Ravi was well-known for his witty sense of humour and ability to find inventive solutions to everyday problems.

Ravi had been trying to figure out how to distribute feed to his cows without it getting all over the place. He tried several methods, but none of them seemed to work which frustrated him immensely. One day he put on his thinking cap and came up with an unusual idea.

He decided to build a massive feeding apparatus out of pulleys, levers, and buckets. The device was made up of a network of interconnected pipes and tubes that transported feed from the storage area to each cow's feeding trough.

Ravi, ecstatic about his invention, invited his fellow farmers to the grand unveiling of his "Feed-o-matic 3000." The farmers gathered around Ravi,

curious to see what he'd come up with this time.

Ravi stood proudly beside his creation, explaining the Feed-o-matic 3000's intricate workings. When he pulled a lever, the system went into action. Feed was routed through the network of pipes to the cows' troughs.

However, Ravi had overlooked the cows' mischievous nature. Curiosity drove the cows to follow the sound and movement of the feed as it passed through the pipes. Before Ravi knew it, a herd of cows was marching behind the pipes, eager for their turn at the feed.

The scene was both amusing and chaotic. The cows formed an unexpected parade, led by Ravi's Feed-o-matic 3000. The farmers burst out laughing, unable to contain their delight at seeing the marching cows.

Ravi couldn't help but laugh as he realised his invention had unintentionally created a comical spectacle. He watched as the cows paraded around like loyal soldiers, eagerly following the feed distribution system.

Ravi's Feed-o-matic 3000 quickly became the talk of the town. The marching cows story travelled far and wide, bringing smiles and laughter wherever it went. Ravi embraced the laughter with his quick wit, and he became known as the farmer who had unintentionally turned his cows into a marching band.

Ravi eventually modified the Feed-o-matic 3000 to ensure the cows received their feed without the parade. But he kept the marching cows in his heart, always ready to share a good laugh and a reminder that, even in the world of farming, a touch of humour can make everyday challenges a little more enjoyable.





Livestock Expo 2023: Amplifying Livestock Potential, Creating Business Synergies

The first edition of 'The Livestock Expo 2023' was held successfully at India Expo centre & Mart Greater Noida, Delhi NCR, India. The event was successful in attracting business visitors from almost every region of the Indian subcontinent as well as from abroad.

The Livestock Expo was inaugurated by Mr. Ranpal Dhanda (President, Poultry Federation of India), Mr. Azad Singh Rathi (President, Broiler Breeder Association-North), Mr. Ricky Thaper (Treasurer, Poultry Federation of India),

Mr. Ravi Sabarwal (Chairman, Broiler Breeder Association-North) and Dr. Harinder Singh (Director, Excellent Enterprises Pvt. Ltd.).

The show included a high proportion of exhibits with National and International visitors, as well as a comprehensive product range from India's market leaders. The Livestock Expo 2023 was a gathering of international and national manufacturers and dealers to showcase their latest products, technology, and equipment, as well as to meet and

network with the trade industry and end users in order to find new business.

NSIC, CLFMA of India, All India Food Processors' Association, Broiler Breeders Association (North), All Kerala Poultry Federation, Poultry Farmers Broilers Welfare Federation, and many more domestic and International partners supported the event.

The feedback from the participants was overwhelming. For Umang Saxena, Territory Sales Manager, AMUL (GCMFMF) The Livestock Expo 2023 was



a fantastic experience. Hes said that "I hope to participate in more events in the coming years. And attracts the best opportunities."

"We had a good experience with this expo; we found enough business and expect more in the future." DSS Imagetech's Business Head (Seqlo), Tapash Chakraborty

"This show is beneficial to us because we gained new customers from all over India and we would like to participate in future events." Prajkat Life Science

Ltd.'s, Shyamsundar Paul, Business Development Manager.

"Overall, the exhibition was excellent. We are delighted to be participating and meeting all of our old and new customers after such a long time. We are extremely pleased with the organising team." ST Genetics, Techno Commercial Manager, Shyam Sundar Tripathi,

"We are excited to be a part of the expo. We received a large number of inquiries and targeted visitors as a result of the unexpectedly high

footfall." Dr. Upkar Kansal, Managing Director, UK German Pharmaceutical.

'The Livestock Expo' exhibition concluded with an excellent record in terms of trust-based discussions and contacts in the spirit of construction and progress. The Livestock Expo was a good public interactive platform for sharing resources, purchasing products, and displaying brands for the people and industry. The positive feedback from the participants definitely points to a larger show in the next edition.







Is RBI going to sanction loans for dairy farmers in just 10 minutes?

18th JULY 2023 (HARYANA): Getting a loan from a bank is a real struggle for today's farmers. But wait! RBI has a great solution for this problem as it introduces the Reserve Bank Innovation Hub that enables the data on milk sold by dairy farmers to Amul or other land records available with state government to determine the payment ability.

The initiative of 'frictionless credit, which is prepared for dairy and farm loans, will help the government sanction the loan in just 10 minutes. It will also save the farmers time and money. Moreover, the RBI has decided to introduce this new scheme of frictionless credit for other loans such as education, vehicle, and personal loans. Thus, the new initiative of frictionless loan sanctioning will make loan sanctioning quicker and faster, as RBI's own survey has already shown that it used to take two to four weeks to process farm loans and cost 6% of the loan amount.

According to an RBI official, "it will be equivalent to ONDC for lending. Banks will be able to tap into data from multiple resources that decide on giving loans."

The entire procedure is app-based for both the borrower and the bank official, who will use biometric authentication and deploy hand-held devices to verify the borrower's credentials for the loan. In the case of farm loans, the bank will use digitised bank records, a PAN card, and Voter ID to process a loan. The bank can also use the satellite-based data to determine creditworthiness for a loan to grow paddy, wheat, and maize. Similarly, for milk, Amul's database of 30 million farmers can be accessed now. But the loan will only be sanctioned according to the land holdings of the farmers.

According to RBI, the main challenge of this project was to get banks to rework their process since their loan origination system did not interact as another RBI official says, "Even they could access

land record details, KYC, Credit score or other details, it was not integrated. Similarly, each bank must get separate tie-ups, making the task tough."

Mooofarm, a dairy as a service company, wins 'Start-up' of the Year at the India Health Summit & Awards

Mooofarm, a dairy-as-a-service firm, was awarded the prestigious 'Start-up of the Year' award at the India Animal Health Summit and Awards, supported by the Ministry of Animal Husbandry and Dairying and the G20, where industry experts, investors, and entrepreneurs gathered to recognise the outstanding achievements of visionaries who have made significant contributions to the agricultural landscape.

Mooofarm, founded four years ago by a group of passionate people with a common vision, has quickly emerged as a game changer in the dairy industry. Mooofarm has disrupted traditional dairy farming practises and introduced a revolutionary concept - "dairy as a service." It does so by leveraging cutting-edge technology and a strong commitment to sustainability.

The idea is to use modern technology to optimise processes while also providing dairy farmers with access to quality cattle breeds, premium feed, vet services, and financial connections. This not only lowers operational costs, but also ensures that dairy farming remains a viable and profitable venture for small-scale farmers, promoting rural economic development.

Dairy farmers can use the startup's tech platform to buy cattle, get tele-health and nutrition services, and get loans to buy dairy inputs. The company made Rs 55 crore in revenue in the fiscal year that ended March 2022 and expects to make Rs 120 crore in the current fiscal.

Mooofarm has previously received numerous national and international awards, including honours from the International Dairy Federation, Forbes, and the World Economic Forum. The industry is already feeling the effects of Mooofarm's innovative approach, with an increasing number of dairy farmers embracing the concept and reaping the benefits.

Mooofarm's model, which promises a modern, tech-driven approach to traditional farming, has been instrumental in attracting young talent to the agriculture sector, in addition to increasing dairy production and farm incomes. Currently, the company operates in Rajasthan and Punjab. Mooofarm, founded in 2019 by Param Singh, Aashna Singh, Abhijeet Mittal, and Jitesh Arora, is organising the pre-farm gate dairy sector, a large and untapped market that accounts for nearly 4.6 percent of India's GDP.

The 'India Animal Health Summit' is a forum for states to discuss their roles and contributions in the animal health sector, as well as new issues and opportunities, in order to assist them in adopting a holistic approach to animal health management.

Tetra Pak leads Dairy Processing Task Force to accelerate climate action

Tetra Pak has initiated the Dairy Processing Task Force – a joint coalition that aims to bring in figures from across the dairy sector to improve approaches to decarbonisation within dairy processing. Its formation reinforces Tetra Pak's contribution to the global dairy sector's Pathways to Dairy Net Zero Initiative.

The Dairy Processing Task Force, spearheaded by Tetra Pak, will pre-competitively explore the innovative systems and technologies needed to further drive down greenhouse gas (GHG) emissions across dairy production systems and regions. At

present, dairy accounts for 2.7% of the world's GHG emissions¹.

Championing the implementation of more sustainable solutions, Tetra Pak will lead discussions with pivotal players in the dairy sector to drive the latest advances in processing technology and share best practices across the industry. New innovations and technologies have the potential to reduce energy and water consumption, as well as food waste, in dairy production.

The core deliverables of the Dairy Processing Task Force will be developed as members join, in an effort to maximise the potential value of each member's contribution. In general, the Task Force aims to:

- Measure and mitigate GHG emissions in dairy processing
- Create and share best practices to reduce GHG emissions
- Identify and implement credible reduction solutions
- Establish industry standard sustainability guidelines and reporting frameworks to encourage consistency and joint purpose

In many parts of the world, dairy serves as a major source of nutrition, and with the global population set to hit 10 billion in 2050², its role in global food systems is vital. However, there is an urgent need to mitigate its environmental impact. As such, the Task Force will look specifically at what can be done to further lower emissions without compromising outputs or nutritional value, safeguarding dairy's role in safe and resilient food systems.

Charles Brand, Executive Vice President for Processing Solutions & Equipment, Tetra Pak says: "Dairy plays a vital role in contributing to livelihoods, food security and nutrition, yet sits within a food system that is not sustainable in the long run. At Tetra Pak, enabling the transition to sustainable dairy is a key pathway in our sustainable food systems strategy. We are continually striving to optimise performance for our customers, working with them, alongside suppliers and partners, in a bid to reduce pressures on finite resources - land, water and energy. The launch of this Dairy Processing Task

Force will expand this approach beyond our own operations and bring together the expertise of leaders in our industry.

"Sustainability is arguably one of, if not the, key challenge that we as an industry need to address. This can only be achieved through collaboration, and we encourage other leading members of the dairy value chain to join us on this journey. Together, we can accelerate real climate change action across the dairy sector."

Donald Moore, Executive Director, Global Dairy Platform, said: "Globally, the dairy industry is working to produce highly nutritious foods sustainably and responsibly to meet the demands of a growing world population. However, the impact of climate change leaves the entire value chain at risk, and as an industry, it is critical we act quickly and strategically on environmental issues.

"As a global leader in innovative systems that improve the efficiency, quality, and safety of food production and processing technologies, we believe that Tetra Pak is well suited to lead the processing component of the Pathways to Dairy Net Zero Initiative."

Source: <https://www.tetrapak.com/>

From Rapper to Flavor Curator: Snoop Dogg's Bosslady Foods Launches Dr. Bombay Ice Cream

Snoop Dogg, the legendary hip-hop artist and visionary entrepreneur, is breaking into the frozen dessert aisle with his whimsical new creation, Dr. Bombay Ice Cream. Snoop Dogg proudly launches Dr. Bombay Ice Cream, an ice cream experience that will help you free your mind and rock your taste buds to the core, in collaboration with Happi Co. Dr. Bombay takes centre stage as the countdown begins, with a nationwide rollout beginning on July 24th at 3,500 Walmart stores.



Customers can expect a one-of-a-kind but nostalgic experience from Dr. Bombay Ice Cream. Snoop Dogg, the brand's founder, handpicked each of the seven launch flavours to curate an ice cream collection that allows them to find their own flava. Customers will be able to enjoy the rhythmic blend of Bonus Track Brownie, the creamy delight of Cocoa Cream Cookie Dream, and the refreshing zing of Iced Out Orange Cream in the near future. Rollin' In the Dough, S'more Vibes, Syrupy Waffle Sundaze, and the vibrant Tropical Sherbet Swizzle are among the other enticing flavours.

Dr. Bombay Ice Cream is no exception to Snoop Dogg's love of good food and a good time. Snoop Dogg said of his new venture, "Ice cream is more than just a snack to me; it's a way to chill, relax, and get happy." That's exactly what I want Dr. Bombay Ice Cream to do: make you smile and make you feel better. I've put my heart and soul into perfecting these first seven flavours, and I can't wait for my fans and the rest of the world to try them. Fans will also notice that my sidekick, Dr. Bombay, is the brand's name, face, and persona. That's because he's like a son to me, and you always want your children to be more successful than you are; that's my goal in developing this lifestyle brand, which began with ice cream."



Dr Bombay Ice Cream is the first product line to launch under the parent company Bosslady Foods, which emerged from the groundbreaking joint venture between Snoop Dogg and Happi Co. Bosslady Foods embodies Snoop Dogg's unrivalled expertise in flavour curation, with a commitment to providing snacks that allow fans to unwind with a pint of sweet serenity. Dr. Bombay Ice Cream is supported by Bosslady Foods and Happi Co. by infusing it with their expertise, ensuring a delightful and unparalleled experience that exceeds expectations.

Bosslady Foods is the new visionary parent company behind Dr. Bombay Ice Cream, born from a groundbreaking collaboration between Snoop Dogg and Happi Co. Bosslady Foods embodies Snoop Dogg's unrivalled flavour curation by providing snacks that allow fans to enjoy the moment and unwind.

Happi Co. is a consumer packaged goods company that is revolutionising the consumer experience. Happi Co. intends to streamline communications, improve clarity as a brand house, and provide authentic experiences and innovative products that amplify the modern lifestyle with the impending launch of Dr Bombay. Happi Co. envisions becoming trailblazers in the CPG industry, setting new standards in product development, with core values of partnership, transparency, and innovation. Happi Co's mission, vision, and commitment to creating a vibrant lifestyle through its diverse portfolio of cutting-edge brands and products are open to media outlets and stakeholders. For more information, go to www.thehappi.co.

Bengal govt to build Rs 65 cr greenfield modern dairy project at Haringhata

The first new modern dairy project since the 1970s will be constructed by the West Bengal government at Haringhata in the Nadia district, costing Rs 65.48 crore.



The West Bengal Livestock Development Corporation Limited (WBLDCL), the executing agency for Banglar Dairy Ltd, a company owned by the state government's animal resources department, has awarded the turnkey contract to Ice Make Refrigeration Limited.

The West Bengal Livestock Development Corporation Limited (WBLDCL), the executing agency for Banglar Dairy Ltd, a company owned by the state government's animal resources department, has awarded the turnkey contract to Ice Make Refrigeration Limited.

"This will be a modern dairy project with a processing capacity of 1.5 lakh litres of milk, but in the first phase, it will be one lakh litres a day. It will process fresh milk and value-added milk products. This fresh public sector dairy project is coming up after decades, since the 1970s," WBLDCL managing director Gouri Shankar Koner told PTI.

"Commercial production is expected by September 2024," he said.

According to the terms of the agreement, Ice Make will oversee the project, which will involve the complete design, supply, installation, and commissioning of civil, mechanical, and electrical work for 1.0 LLPD (with the potential to grow to 1.5 LLPD).

According to Ice Make's CMD Chandrakant Patel, it is their largest order to date. The manufacturer's new production facility, called "ICEBEST," in West Bengal, was successfully commissioned, and he continued by

mentioning how their numerous goods and business verticals are continually increasing market share.

Govt may seek cut in ghee, butter GST



Government documents that the government may suggest lowering the goods and services tax (GST) on butter and ghee from the current 12% to 5%.

The initiative comes at a time when retail milk prices have increased by 10.1% in a year and by 21.9% over the previous three years because of rising calf feed and fodder costs.

The federal indirect tax body, the GST Council, will then be asked to review the idea after it has been submitted to the finance ministry's GST Fitment Committee by the animal husbandry and dairying department.

"If you put ghee under the luxury product category, under a 12% GST slab, it pinches pockets of consumers as well as farmers. India is meeting 70% of its edible oil consumption by importing palm oil, which is placed under a 5% GST slab," said Indian Dairy Association president Rupinder Singh Sodhi.

"A 12% GST translates to ₹70 per kg, and to make a kg of ghee, it requires

12-14 litres of milk. Where farmers could get ₹5-6 more on milk price, they end up spending more because of the 12% GST on ghee. The government is basically taxing not only consumers but also farmers."

The spokespeople for the finance, animal husbandry and dairying, and GST Council departments did not respond to inquiries.

To rationalise the tax and stop tax leakages, the GST Council removed exclusions from some dairy products in July of last year. Condensed milk, cheese, butter, and ghee are taxed at 12% while pre-packaged and labelled milk products, such as paneer, curd, lassi, and buttermilk, are subject to a 5% GST.

"The GST on ghee and butter should be equal to cooking oil, which is 5%, so that farmers get the right price for their agricultural produce," Sodhi said.

In addition to helping farmers, lowering the GST on ghee will halt the inflationary tendency. Reduced ghee costs would also aid in reducing milk adulteration and enable producers to lower milk retail prices.

"We are focusing more on ghee because white butter is prepared in winter and stored, and during summer, skimmed milk powder and white butter are recombined and milk is produced. This milk is sold in the market," Sodhi said. While milk is exempt from GST, milk powder attracts a 5% rate.

"Reduction of GST will also bring down retail inflation in milk, which was 8.56% in June," Sodhi said.

The organised sector accounts for 30,000 crore of India's estimated 1.25 trillion rupee ghee and butter market. Dairy cooperatives and the dairy sector in India have repeatedly brought up this problem with the government and made various submissions on it.

Third Phase of the Foot and Mouth Disease Vaccination Programme is

Launched by the Animal Husbandry Department in Kishtwar



The third phase of the National Animal Disease Control Program's (NADCP) Foot and Mouth Disease Vaccination (FMD vaccination) was started by the Department of Animal Husbandry Kishtwar under the direction of Director Animal Husbandry Jammu.

Vaccination teams and veterinary assistant surgeons actively participated in the launch ceremony, which was held at Suresh Dairy Farm in Indra Nagar under the direction of Chief Animal Husbandry Officer Dr. Sanjay Kumar Sen. The Chief Animal Husbandry Officer (CAHO) emphasised the importance of the immunisation and informed the audience that all bovine animals will be inoculated against Foot and Mouth Disease throughout the campaign, which will last for a period of 45 days. He emphasised that all cattle owners would receive the vaccine for no charge.

The Department of Animal Husbandry has instructed the vaccination teams to extend doorstep vaccination services to ensure the comfort of farmers. All farmers were urged to use this chance and make sure their livestock were immunised by Dr. Sanjay Kumar Sen. It is important to note that foot and mouth disease, which affects animals with cloven hooves like cattle, goats, and sheep, is a highly contagious viral infection. Farmers may suffer large financial losses because of decreased

milk output and deteriorated meat quality. Strategic vaccination drives and enhanced animal health management techniques are part of the National Animal Illness Control Program's effort to manage and eradicate this illness.

Vet varsity cautions against impact of flood water on animal health

Numerous areas of Punjab have been swamped by constant rain and flooding, creating challenging conditions for cattle ranchers. Rain and floodwater can expose livestock to viral and parasite diseases. The prevalence of livestock parasites and vectors, such as mosquitoes, flies, leeches, and ticks, is increased by floodwater. Bovine ephemeral fever and other vector-borne illnesses can be transmitted to dairy cattle by flies and mosquitoes.

Adequate management is needed, according to Dr. PS Brar, Director of Extension Education at Guru Angad Dev Veterinary and Animal Sciences University, to avoid the spread of these parasites. Additionally, cattle are susceptible to theileriosis, anaplasmosis, and other tick-borne illnesses. Repairing any holes or breaches in the walls and floor of the shed before applying the necessary acaricides is the best way to eliminate ticks in livestock shelters, according to experts.

"Floodwater may be contaminated with Salmonella, E. coli, Clostridium and Leptospira. Contaminated water is also a source of gastric parasites of animals which can cause symptoms like jaundice and diarrhoea. The animals must be enclosed at a safe distance from stagnant water. Deworming of dairy animals must be done under the supervision of veterinary officers as per requirement," said Dr Brar.

He added that there was also a chance that dairy animals may go lame from foot rot brought on by wet flooring. To lessen the likelihood of foot rot, dip the animals' hooves in a formalin solution containing 5% formaldehyde. Increased

shed humidity may also lead to an increase in mastitis and hemorrhagic septicaemia cases. To lower the risk of mastitis, teats after milking should be dipped in a 3:1 solution of betadine and glycerine. Animals must receive vaccinations to guard them against septicemia and lumpy skin disease.

By encouraging the growth of mould, which can result in poisoning, moisture has an impact on the quality of feed and dry fodder. Additionally, efforts should be taken to shield the feed from dampness and the development of mould. Additionally, a lack of fodder can lower an animal's immunity, making them more susceptible to pathogenic germs. Another expert in animal husbandry suggested that a mix of vitamins and minerals may help enhance the immunity of animals in cooperation with experts.

Dairy farmers and tribes developed a successful renewable energy programme

Dairy farmers and tribes in Monroe, Washington, have developed a successful renewable energy program using cow manure and other organic waste. The program, which aims to capture methane from cow manure and other organic waste, has been regarded as one of the best climate investments that states can undertake. The program has accounted for approximately 30% of California's greenhouse gas reduction while using slightly more than 2% of the state's climate investments. The Tulalip Tribes and a dairy farm in Monroe have a prosperous working relationship that dates back far before Washington had a carbon budget or invested money from the sale of carbon emission permits.

Qualco Energy, a project that began operations in 2008, has been a collaboration between the dairy, the neighboring Tulalip Tribes, and Snohomish County PUD. The project captures methane from cow manure and other organic waste and converts it into valuable renewable energy. The project

also creates premium liquid fertiliser for farmers that Qualco Energy can market and sell to cover its expenses. The partnership was able to pay off the government bond that enabled them to construct the digester in December.

The main reason for starting this cooperative endeavor was to prevent manure from leaking into the surrounding Skykomish and Snoqualmie Rivers. Farmers would distribute methane on their fields and let it disintegrate for up to 18 months, which often destroyed salmon habitat. This helps keep nutrients out of their watershed and helps farmers use their nutrients more efficiently. The shared value discovered in land stewardship is the key result of their collaboration.

The project's visibility has increased due to the value of its clean energy. The technology for a pilot project to turn Qualco Energy's methane into pure hydrogen will be delivered the following year. This technology allows the farmers to convert methane to hydrogen, which is arguably the cleanest fuel available.

The growth of these initiatives is expanding both domestically and worldwide, with priority for tribes and other communities disproportionately impacted by climate change. The priority recipients of the billions of dollars in state and federal funding supporting these solutions are tribes and other communities who are disproportionately impacted by climate change.

Cooler summer halts the dairy crisis

India, the world's top provider of liquid milk, experienced a scarcity of milk products from January to March, increasing the likelihood that imports would be necessary.

The situation is completely different now. Milk procurement costs have decreased in several centres and supplies are steady.

Industry insiders claim that during the past several weeks, the price of buffalo

milk across India has dropped by roughly 3%, falling to around 52 rupees per litre as opposed to 54-55 in January-March.

Like this, the cost of cow milk has decreased 10-13% to about 33 cents per litre from 37-38 in January-March.

Even if some markets still have high procurement prices, this softening portends a reduction in the problem facing dairy companies.

What led to this change, and how long will it last? Veterans of the milk industry cite a few reasons for this U-turn.

First, milk supply did not decline as they usually do during the lean season, which runs roughly from April to September. That's because of the flush season's unexpected extension, which was supposed to cease with the arrival of summer.

Assuming an annual yield of 220 million tonnes, India typically produces 550 million gallons of milk each day. During the flush season, this normally increases by at least 30% and during the lean months, it either declines or remains unchanged. Compared to the same time last year, milk supply this year (FY-24) have been 5-7% higher throughout the lean months.

Milk output is being increased, according to Minister Mano Thangaraj

T. Mano Thangaraj, the minister for milk and dairy development, stated on Saturday that several measures are being implemented to help farmers have more animals and earn a more balanced income.

At the opening of milk cooling facilities in Karur, Mr. Thangaraj stated that in order to boost procurement, officials were given targets for each district and that numerous actions, such as the purchase of two lakh milk cows, the disbursement of loans to farmers, and the encouragement of farmers to grow fodder, were being taken.

Editorial Calendar 2023

Publishing Month: January Article Deadline : 28th, Dec. 2022 Advertising Deadline : 30th, Dec. 2023 Focus : Climate Management	Publishing Month: February Article Deadline : 28th, Jan. 2023 Advertising Deadline : 30th, Jan. 2023 Focus : Nutritional Deficiency Effects	Publishing Month: March Article Deadline : 26th, Feb. 2023 Advertising Deadline : 28th, Feb. 2023 Focus : Herd / Breed Management - Fertility, Breeding & Reproduction	Publishing Month: April Article Deadline : 28th, March 2023 Advertising Deadline : 30th, March 2023 Focus : Disease Prevention/ Risk Assessment
Publishing Month: May Article Deadline : 28th, April 2023 Advertising Deadline : 30th, April 2023 Focus : Small Ruminants Management (Sheep, Goat etc)	Publishing Month: June Article Deadline : 28th, May 2023 Advertising Deadline : 30th, May 2023 Focus : Calf & Heifer Management	Publishing Month: July Article Deadline : 28th, June 2023 Advertising Deadline : 30th, June 2023 Focus : Milk Production Management/ Milking Practices	Publishing Month: August Article Deadline : 28th, July 2023 Advertising Deadline : 30th, July 2023 Focus : Feed & Fodder
Publishing Month: September Article Deadline : 28th, August 2023 Advertising Deadline : 30th, August 2023 Focus : Vaccination Protocols/ Cattle Herd Immunization	Publishing Month: October Article Deadline : 28th, September 2023 Advertising Deadline : 30th, September 2023 Focus : Dairy By-products	Publishing Month: November Article Deadline : 28th, October 2023 Advertising Deadline : 30th, October 2023 Focus : Potential of Dairy Farming	Publishing Month: December Article Deadline : 28th, November 2023 Advertising Deadline : 30th, November 2023 Focus : Calf Management

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